

# METHOD FOR CODING SEMICONDUCTOR PERMANENT STORE ROM

## Abstract

A method for manufacturing a ROM device includes a semiconductor substrate having an array of field-effect transistors within a ROM region. A first dielectric layer covers the array and all transistors are initially in an "ON" state. A second dielectric layer covers at least one layer of metal interconnection formed over the first dielectric layer. The bit lines do not overlap the transistor-sources. A coding photoresist layer is formed on the second dielectric layer and is patterned to form a plurality of apertures defining exposure windows exposing underlying field-effect transistors to be coded permanently to an "OFF" state. A code etching back process is implemented using the photoresist layer as a mask to etch the first and second dielectric layers, the sources of the MOSFETs, and a portion of the substrate through the exposure windows to form a deep trench, disconnecting the coded MOSFETs from the source lines.